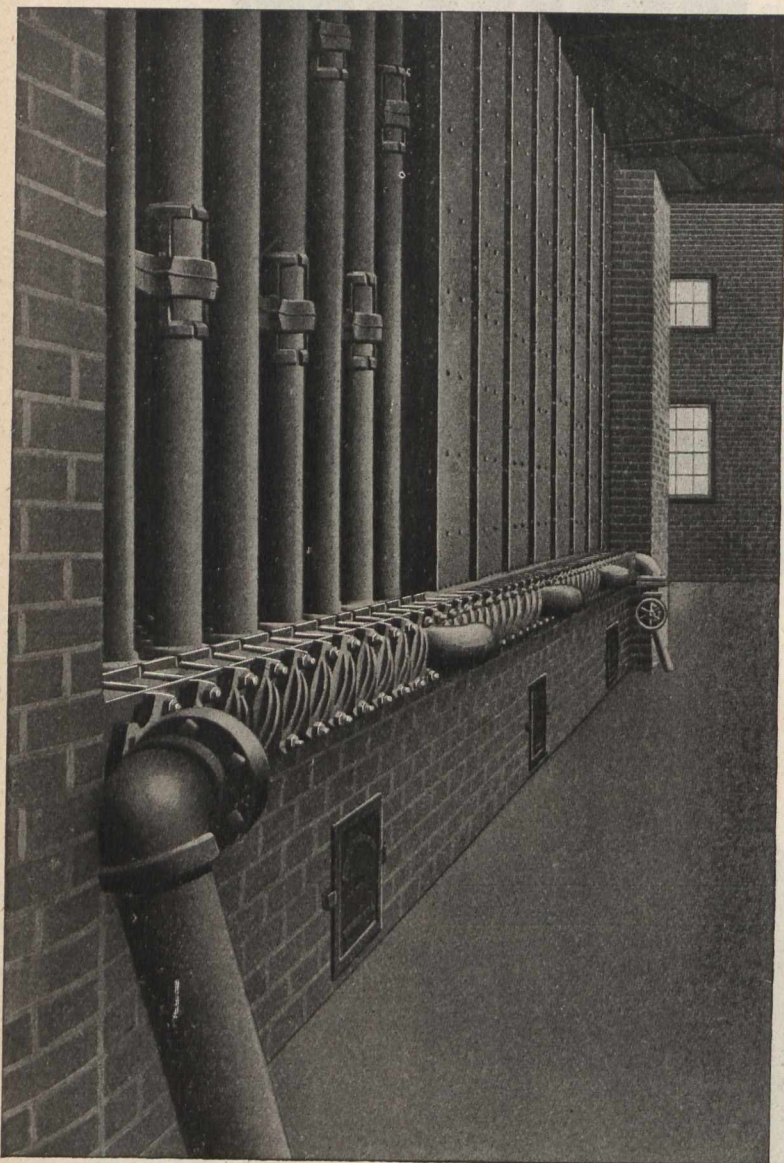


to twelve wide, the staggered system of pipes making it possible to build sections of an odd as well as an even number of pipes. The "Standard Economizer" is adaptable to power plants of almost any size, but is more commonly used for boiler capacities of 350 horse power and over. The "Pony" type, as its name implies, is smaller than the "Standard" and is more adaptable to power plants of 350 horse power and less. All machines are made of the best cast iron for the purpose. All parts are tested to three hundred and fifty (350) pounds pressure before leaving the works and guaranteed to be sound and tight. All parts are machined to special gauges and kept in stock so that duplicates can be furnished without delay. The several installations of the Sturtevant economizers have proven highly efficient. Not only has it been proved that the gases are reduced to a remarkably low temperature with a comparatively small amount of heating surface, but the water has also been heated to an exceptionally high temperature. In



cases where the feed water contains foreign substances, the owners have found these machines to be especially valuable owing to their accessibility and ease of cleaning. An illustrated catalogue describing the Sturtevant "Standard" and "Pony" economizers is issued by the B. F. Sturtevant Co., Hyde Park, Mass., and is of interest to all steam users.



The Freeman, Hines Co., of London, manufacturers of drain pipes, fitted with a patent double seal joint, are desirous of establishing a Canadian branch. The company has a capital stock of £50,000, and if a branch were established in Canada would have a paid-up capital of £75,000. They would employ from 80 to 90 hands. Parker & Bickford, solicitors, Toronto, are handling the Canadian interests of the firm.

**TOOL MAKERS' CALIPERS AND DIVIDERS.**

A new line of calipers and dividers has recently been placed upon the market by the Brown & Sharpe Mfg. Co. of Providence, R.I. These show a radical departure from the well known lines of this class of tools, in that the legs are round and not flat, a feature that is readily appreciated, as this form adds materially to the stiffness and gives a neatness and finish that could not otherwise be obtained. This line new in design and intended to meet the demand for a tool adapted to the more delicate work required in tool making as well as to general use. Every care has been taken in proportioning the various parts to insure extreme rigidity combined with lightness and durability. The fulcrum stud is hardened, thus reducing the wear to a minimum and preventing the roughing up of the bearings. The spring is unusually stiff and of improved form with concave ends that fit into grooves milled in the ends of the legs. This construction insures rigidity, prevents side deflection of the legs and gives uniform pressure throughout the extreme movement. The legs are of steel, round, highly polished and every care is taken to have them uniform in finish. The measuring points come together evenly, a feature readily appreciated by every mechanic. The screw is of exceptionally fine pitch for accurate adjustment and is provided with a solid nut and hardened thrush washer.



**RURAL TELEPHONES.**

Nearly ten years ago the farming sections of Illinois and Indiana began fighting the Bell Telephone monopoly by installing co-operative lines. The plan has been quite successful, so much so that the Bell Company now offer rural telephones at very much reduced rates.

A plant of forty miles in Indiana, with good poles and wires and modern instruments, cost just what was received in dividends in three years, and a sinking fund is now being established. The cost of maintenance is said to be not five dollars a subscriber.

In building a rural telephone line, 25-foot poles, 5 inches at the top, should be placed 130 to 150 feet apart. Cedar poles are best, their life being 12 years. They should be well seasoned and peeled, and will last longer if cut in the fall. The tops of poles should be roofed. For cross-arm cut gain 7 inches from top, and 4 1/4 inches wide. If two cross-arms are to be put on, cut another gain 18 inches from top. Cross-arm should be bolted to pole with 1/2 x 7 lag bolts; two 20-inch iron braces should be bolted to cross-arm with 3 1/2-inch carriage bolts, secured to pole with 3-inch lag screws. Pole should be set one-seventh of its length in the ground.

When wires are near heavy currents, such as car and light lines, use metallic circuit; that is, two wires for each line, and transpose the wires at every fourth pole. Never place wires within six feet of heavy currents. Solder all splices in the wire, and make tie wires about 9 inches long.

Secure telephone to wall, and run covered wire from telephone to outside wires, placing lightning fuse block near the 'phone, between line and 'phone.

The cost of one mile metallic circuit in Illinois is estimated as follows:

40 cedar poles, 25 feet, 80 cents each.....	\$32 00
80 glass insulators.....	1 20
80 oak brackets.....	1 00
160 spikes .....	50
2 miles No. 12 galvanized iron wire.....	11 55
Digging forty holes, 15 cents each.....	6 00
Filling 40 holes, 15 cents each.....	6 00
Stringing two miles wire.....	4 00
Peaking poles and nailing brackets.....	1 50
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	\$63 75

(For part of the above information we are indebted to a neat circular issued by the Farr Telephone and Construction Supply Co., 118-120 W. Jackson Boulevard, Chicago.)